

## **II. Amendments to the Specification**

1. Please replace the first paragraph on page 9 with the following amended paragraph:

Referring now to Figure 4, one embodiment of the present arrangement is depicted in a cross sectional view illustrating the piston assembly 31 axially disposed on the outer radius of the cutter rod 40. The outer piston 36 38 is slidingly disposed on the inner piston 34 36 and is separatable from the inner piston 34 36. As shown in Figure 4, the cutter rod 40 includes a ridge 41 where the diameter of the cutter rod 40 abruptly decreases. At the time the side entry sub 22 is attached to the drill string 15 and the wireline 10 threaded through the side entry sub 22, the piston assembly should be on the upper section of the cutter rod 40 above the ridge 41. It should be pointed out that when the piston assembly is on the cutter rod 40 as shown in Figure 4, the cutting blade 44 should be disposed on one side of the housing 23 and adjacent the wireline 10 as displayed in Figure 3. The diameter of the cutter rod 40 above the ridge 41 is preferably about one half the diameter of the cutter rod 40 below the ridge 41. When the piston assembly is above the ridge 41, spatial clearance exists between the outer diameter of the cutter rod 40 and the inner piston inner diameter 37. This clearance allows lateral movement of the cutter rod 40 within the inner piston 36 thereby enabling the cutter rod 40 to be situated in the angle  $\theta$  depicted in Figure 3. This gap further enables fluids to flow past the piston assembly 31 without creating excessive pressure loss, as it is sometimes necessary to pump fluid for extended periods to cool the logging tool 16. This is particularly true in high temperature wells where failure of a sensitive logging tool 16 will result if not cooled down by continuously pumping fluid from the surface.

2. Please replace the first full paragraph on page 12 with the following amended paragraph:

The piston assembly will continue to be propelled downward in response to the application of actuation pressure applied to its top even after the wireline 10 is severed. With continued downward movement, the piston assembly 31 will contact the shoulder 42 that is disposed on the lower portion of the cutter rod 40. As previously pointed out the outer piston 36 38 is separatable from the inner piston 34 36, thus as the piston assembly 31 contacts the shoulder 42 thereby preventing further downward movement of the inner piston 34 36. Continued actuation pressured applied to the piston assembly 31 causes the outer piston 36 to separate from the inner piston 34 36 and be urged further downward until it contacts the upper side of the cutter blade 44. To ensure that the outer piston 36 38 separates from the inner piston 36 when the piston assembly 31 contacts the shoulder 42, the diameter of the shoulder 42 should not exceed the diameter of the inner piston 34 36.

3. Please replace the second full paragraph on page 12 with the following amended paragraph:

One of the advantages of separating the outer piston 36 from the inner piston 34 36 is that a flow path 64 60 is created between these two pistons that enables fluids to flow through the side entry sub 22 after the wireline 10 has been severed. Creating the flow path between the pistons

provides a way of relieving the hydraulic pressure produced to actuate the cutting assembly 30, thereby noticeably reducing the pressure within the wellbore 5. Monitoring the wellbore pressure to detect such a pressure drop can then provide an indication that the wireline 10 has been severed. Another advantage realized by the ability to flow wellbore fluids through the side entry sub 22 after severing the wireline 10 is the ability to provide those fluids deep within the wellbore 5. As can be appreciated by those skilled in the art, in some gas kick or potential blow out conditions, the ability to deliver fluids to the wellbore 5 can be critical in maintaining control of the well.

4. Please replace the first full paragraph on page 13 with the following amended paragraph:

The presence of the ridge 41 on the cutter rod 40 causes the piston assembly 31 to accelerate as it travels past the ridge 41 that in turn helps to ensure separation of the outer piston 36 38 from the inner piston 34 36. Since the diameter of the cutter rod 40 is smaller above the ridge 41 than below it, the inner piston 34 36 experiences a larger effective cross sectional area on its lower end when the inner piston 34 36 is above the ridge 41. This in turn translates into a larger effective cross sectional area on the bottom of the piston assembly 31. Accordingly, when the piston assembly 31 moves onto the ridge 41 the effective cross sectional area of the bottom side of the piston assembly 31 decreases. As is well known, having a smaller effective cross sectional area on the bottom of the piston assembly 31 will increase the pressure differential across the piston assembly 31 and correspondingly increase the downward force. This increased downward force experienced by the piston assembly 31 as it passes past the ridge 41 will then accelerate the piston assembly 31 to an increased velocity. The increased velocity of the piston assembly 31 can work to ensure separation of the inner piston 34 36 from the outer piston 36 38 as the piston assembly 31 contacts the shoulder 42.

5. Please replace the first full paragraph on page 10 with the following amended paragraph:

During typical downhole operations involving a pipe string 15 combined with a wireline 10, there is usually no reason to sever the wireline 10. As noted above however, the wireline 10 will sometimes need to be severed in order to properly seal around the drill string 15 and prevent a potential blow out condition. When such a need arises, the present invention can be used to sever the wireline 10 by increasing the pump rate at which fluid is pumped down the drillpipe, until the pump rate is sufficient to create the required differential pressure across the pistons assembly 31 causing the shear screws 36 to shear thereby allowing the piston assembly 31 to accelerate down towards the cutting blade 44. As the piston assembly travels down the cutter rod 40 toward the cutter blade 44, the inner diameter 37 of the inner piston, that is substantially coaxial with the axis of the housing 23, moves the cutter rod 40 and aligns it to be substantially coaxial with the axis of the housing 23. Aligning the cutter rod 40 to the axis of the housing pushes the cutter blade 44 away from the opposing wall of the housing 23 and against the wireline 10. When sufficient force has been applied to the top of the piston assembly the

downward movement of the piston assembly will in turn further cause the cutter blade 44 to impinge upon the wireline 10 until the wireline 10 is completely severed.